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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,013	05/22/2001	Milan R. Kokta	3177.1000-000	7269

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EXAMINER

VY, HUNG T

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,013

Applicant(s)

KOKTA ET AL.

Examiner

Hung T Vy

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In response to the communications dated 05/22/2001, claims 1-47 are pending in this application.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant. Information Disclosure Statement (IDS) filed on 01/10/2002 and made of record as Paper No. 4.

Specification

3. The specification has been checked to the extent necessary to determine the presence of possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

4. Claims 18-19 are rejected under 35 U.S.C. 112, first paragraph.

Regarding claims 18-19, the phrase " band within about 4 nm .." and " band within about 2 nm.." are not clear because in the specification, Applicant does not recite an material to support these wavelengths.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-15 and 33-46 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Konstantin V. Yumashev, Applied optics, vol. 38. No. 30.

Regarding claims 1-3,7 and 47, Konstantin v. Yumashev discloses a saturable absorber Q-switch, comprising a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$ where x, y, z are still the range of the invention (See on the right column, first paragraph, page 1). Lattice has tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions (See the right column, the first paragraph on page 1). Its really have the unit cell dimension is between about 7.97 Å⁰ and about 8.083 Å⁰, cobalt is present in the monocrystalline lattice in an amount between about 0.02 atomic weight percent and about 0.043 weight percent and a monocrystalline lattice of cobalt-doped spinel because a saturable absorber Q-switch have the same structure and the same formula as $Co^{+2}:MgAl_2O_4$.

Regarding claims 4-7, Konstantin v. Yamashev discloses the saturable absorber Q-switch, wherein Z is about 4-10 and Y is about 4-6 with different element (See left column, first paragraph and page1).

Regarding claims 8-15, Konstantin V. Yamashev discloses the saturable absorber Q-switch, having an absorption band of between about 1.34 μ m and 1.54 μ m (see left column, first paragraph, page 3).

With respect to claims 33-46, the methods of forming are considered as product by process steps.

Claim Rejections - 35 U.S.C. § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

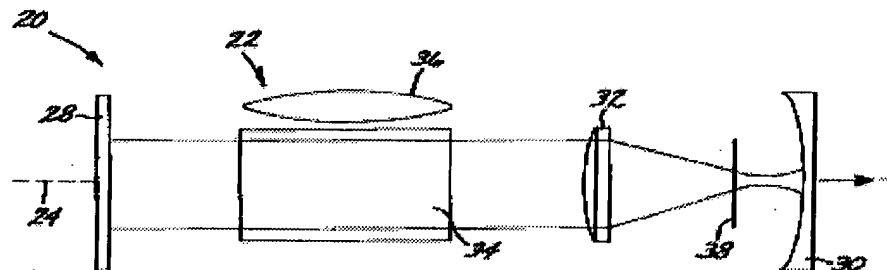
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-32 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Stultz et al., U.S. patent No. 5,654,973 in view of Konstantin V. Yumashev, Applied optics, Vo. 38, No. 30.

Regarding claim 16, Stultz et al. disclose a laser system, comprising:

Art Unit: 2828

- a). a laser resonator cavity defined by a flat mirror (28) and an out coupler mirror (30), flat mirror (28) and said outcoupler (30) mirror oriented to form an optical resonant axis (24);
- b). a lasing element (34) within the laser resonator cavity;
- c) Optical pumping (36) means proximate to said lasing element
- d). A saturable absorber Q-switch (38) lying along the resonant axis. (See Fig 1 below and column 3, line 14-21).

**FIG. 1**

But Stultz et al. do not disclose the Q-switch including a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$. However, Konstantin v. Yumashev discloses a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$ where x, y, z are still the range of the invention (See on the right column, first paragraph, page 1).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify to have a formula $Mg_{1-x}Co_xAl_yO_z$ because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

It would have been obvious to provide Stultz et al. with the limitations as taught or suggested by Konstantin v. Yumashev.

Regarding claim 17, 27 and 31 Konstantin v. Yumashev discloses lattice has tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions (See the right column, the first paragraph on page 1). It really have the unit cell dimension is between about 7.97 \AA and about 8.083 \AA and cobalt is present in the monocrystalline lattice in an amount between about 0.02 atomic weight percent and about 0.043 weight percent because a saturable absorbed Q-switch have the same structure and the same formula as $\text{Co}^{+2}:\text{MgAl}_2\text{O}_4$.

Regarding claim 18-26, Stultz et al. disclose the lasing element is an $\text{Er}:\text{Yb}:\text{glass}$ ($\text{Er}^{3+}:\text{glass?}$) and $\text{Nd}^{+3}:\text{YAlO}_3$ lasing element (See column 3, line 28-34) (or see in Konstantin v. Yamashev at page 1, left column and first paragraph) and the saturable absorber Q-switch has an absorption band of about .95 to about 1.65 micrometers (See column 3, line 51-52).

Regarding claims 28-30, Konstantin v. Yamashev discloses the saturable absorber Q-switch, wherein Z is about 4-10 and Y is about 4-6 with different element (See left column, first paragraph and page1).

Regarding claim 32, Konstantin v. Yamashev discloses the saturable absorber Q-switch has a decay time greater than about $30 \cdot 10^{-6}$ seconds (See fig 3).

Citation of Pertinent References

Art Unit: 2828

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Birnbaum discloses Saturable absorber q-switch for 2 μ M Laser, U.S. Patent No. 5,802,083.

The patent to Stultz et al. disclose Laser System Using U-Doped Crystal Q-switch, U.S. Patent No. 5,557,624.

The patent to Thony et al. disclose Solid Microlaser Passively Switched by a Saturable Absorber and Its production Process, U.S. Patent No. 6,023,479.

The Patent to Yin et al. disclose High Power Laser, U.S. Patent No. 6,366,596.

Conclusion

9. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0759.

The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If

Art Unit: 2828

attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


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Hung T. Vy
Art Unit 2828

October 24, 2002.